CALFED Water Quality Targets for Parameters of Concern

Parameter	Sacramento River	San Joaquin River	Delta
Boron		Water: Mouth of Merced to Vernalis: **2.0 mg/l** (15 March - 15 September)[d] **0.8 mg/l** (monthly mean, 15 March - 15 September)[d] **1.0 mg/l** (monthly mean, 16 September - 14 March)[d] **1.3 mg/l** (monthly mean, critical year)[d]	Water: Agricultural Intakes: **< 0.7 mg/l**
Cadmium	Water: River and Tributaries from above State Hwy 32 bridge at Hamilton City: **0.22 µg/l** [a,c,d] Below Hamilton City: **2.2 µg/l** (4 day average) [a,e] **4.3 µg/l** (1 hour average) [a,e] Sediment: [z] **5.0 ppm** (dry weight)	Water: **2.2 µg/l** (4 day average) [a,e] **4.3 µg/l** (1 hour average) [a,e] Sediment: [z] **5.0 ppm** (dry weight)	Water: East of Antioch Bridge: **2.2 µg/l** (4 day average) [a,e] **4.3 mg/l** (1 hour average) [a,e] West of Antioch Bridge: **1.1 µg/l** (4 day average) [x] **3.9 µg/l** (1 hour average) [x] Sediment: [z] **1.2 ppm** (dry weight)
Copper	Water: River and Tributaries from above State Hwy 32 bridge at Hamilton City: **5.6 µg/l** [a,c,d] Below Hamilton City: **10 µg/l** (no hardness connection) [a,d,f] Sediment: [z] **70.0 ppm** (dry weight)	Water: **9.0 µg/l** (4 day average) [a,e] **13 µg/l** (1 hour average) [a,e] Sediment: [z] **70.0 ppm** (dry weight)	Water: East of Antioch Bridge: **10 µg/l** (no hardness connection) [a,d,f] West of Antioch Bridge: **6.5 µg/l** (4 day average) [x] **9.2 µg/l** (1 hour average) [x] Sediment: [z] **34.0 ppm** (dry weight)

Note: Water quality targets have no regulatory meaning within the context of CALFED.

D—035417

CALFED Water Quality Targets for Parameters of Concern

Parameter	Sacramento River	San Joaquin River	Delta
Mercury (inorganic)	Water: **0.012 µg/l** (4 day average) [b,e] **2.1 µg/l** (1 hour maximum) [a,e] Sediment: [z] **0.15 ppm** (dry weight) Tissue: [i,y] **0.5 µg/gm** (whole fish, wet weight)	Water: **0.012 µg/l** (4 day average) [b,e] **2.1 µg/l** (1 hour maximum) [a,e] Sediment: [z] **0.15 ppm** (dry weight) Tissue: [i,y] **0.5 µg/gm** (whole fish, wet weight)	Water: East of Antioch Bridge: **0.012 µg/l** (4 day average) [b,e] **2.1 µg/l** (1 hour maximum) [a,e] West of Antioch Bridge: **0.025 µg/l** (4 day average) [x] **2.4 µg/l** (1 hour average) [x] Sediment: [z] **0.15 ppm** (dry weight) Tissue: [i,y] **0.5 µg/gm** (whole fish, wet weight)
Selenium	Water: **20 µg/l** (1 hour maximum) [b,e] **5.0 µg/l** (4 day average) [b,e] Tissue: [aa] **4-12 ppm** (fish, whole body, dry weight) **3-7 ppm** (fish food items, food chain, dry weight)	Water: [j] South of Merced River: **20 µg/l** (1 hour maximum) [b,e] **5.0 µg/l** (4 day average) [b,e] North of Merced River: **12 µg/l** (maximum) [b,e] **5.0 µg/l** (4 day average) [b,e] Tissue: [aa] **4-12 ppm** (fish, whole body, dry weight) **3-7 ppm** (fish food items, food chain, dry weight)	Water: East of Antioch Bridge: **20 µg/l** (1 hour maximum) [b,e] **5.0 µg/l** (4 day average) [b,e] West of Antioch Bridge: **20 µg/l** (1 hour average) [b,e] **5.0 µg/l** (4 day average) [b,e] Tissue: [aa] **4-12 ppm** (fish, whole body, dry weight) **3-7 ppm** (fish food items, food chain, dry weight)

Note: Water quality targets have no regulatory meaning within the context of CALFED.

CALFED Water Quality Targets for Parameters of Concern

Parameter	Sacramento River	San Joaquin River	Delta
Zinc	Water: River and Tributaries from above State Hwy 32 bridge at Hamilton City: **16 µg/l** [a,c,d] Below Hamilton City: **100 µg/l** (no hardness connection) [a,d,g] Sediment: [z] **120.0 ppm** (dry weight)	Water: **120 µg/l** (4 day average) [a,e] **120 µg/l** (1 hour average) [a,e] Sediment: [z] **120.0 ppm** (dry weight)	Water: East of Antioch Bridge: **100 µg/l** [a,d] (no hardness connection) West of Antioch Bridge: **106µg/l** (4 day average) [x] **117 µg/l** (1 hour average) [x] Sediment: [z] **150.0 ppm** (dry weight)
Carbofuran	Water: [k] **0.4 µg/l** (daily max. and total pesticide) [h]	Water: **0.4 µg/l** (daily max. and total pesticide) [h]	Water: **0.4 µg/l** (daily max. and total pesticide) [h]
Chlordane	Water: **2.4 µg/l** (instantaneous max.) [e] **0.0043 µg/l** (4 day average, total pesticide) [e] Sediment: [z] **7.1 ppm** (dry weight)	Water: **2.4 µg/l** (instantaneous max.) [e] **0.0043 µg/l** (4 day average, total pesticide) [e] Sediment: [z] **7.1 ppm** (dry weight)	Water: **2.4 µg/l** (instantaneous max.) [e] **0.0043 µg/l** (4 day average, total pesticide) [e] Sediment: [z] **7.1 ppm** (dry weight)
Chlorpyrifos	Water: [m] **0.02 µg/l** (4 day average, total pesticide) [i,g]	Water: [m] **0.02 µg/l** (4 day average, total pesticide) [i,g]	Water: [m] **0.02 µg/l** (4 day average, total pesticide) [i,g]
Diazinon	Water: [n] **0.08 µg/l** (1 hour average, total pesticide) [l] **0.04 µg/l** (4 day average, total pesticide) [l]	Water: [n] **0.08 µg/l** (1 hour average, total pesticide) [l] **0.04 µg/l** (4 day average, total pesticide) [l]	Water: [n] **0.08 µg/l** (1 hour average, total pesticide) [l] **0.04 µg/l** (4 day average, total pesticide) [l]

Note: Water quality targets have no regulatory meaning within the context of CALFED.

D—035419

CALFED Water Quality Targets for Parameters of Concern

Parameter	Sacramento River	San Joaquin River	Delta
DDT	Water: **1.1 µg/l** (instantaneous max., total pesticide) [c] **0.001 µg/l** (4 day average, total pesticide) [c] Tissue: [y] **1 µg/l** (whole fish, wet weight)	Water: **1.1 µg/l** (instantaneous max., total pesticide) [c] **0.001 µg/l** (4 day average, total pesticide) [c] Tissue: [o,y] **1 µg/l** (whole fish, wet weight)	Water: East of Antioch Bridge: **1.1 µg/l** (instantaneous max., total pesticide) [c] **0.001 µg/l** (4 day average, total pesticide) [c] West of Antioch Bridge: **1.1 µg/l** (instantaneous maximum) **0.001 µg/l** (24 hour average) Tissue: [y] **1 µg/l** (whole fish, wet weight)
PCB's	Water: **0.014 µg/l** (4 day average) [c] (each of 7 congeners) Sediment: [z] **50 ppm** (dry weight, total) Tissue: [y] **0.5 µg/l** (whole fish, wet weight, total)	Water: **0.014 µg/l** (4 day average) [c] (each of 7 congeners) Sediment: [z] **50 ppm** (dry weight, total) Tissue: [y] **0.5 µg/l** (whole fish, wet weight, total)	Water: East of Antioch Bridge: **0.014 µg/l** (4 day average) [c] (each of 7 congeners) West of Antioch Bridge: **0.014 µg/l** (24 hour average) Sediment: [z] **50 ppm** (dry weight, total) Tissue: [y] **0.5 µg/l** (whole fish, wet weight, total)

Note: Water quality targets have no regulatory meaning within the context of CALFED.

CALFED Water Quality Targets for Parameters of Concern

Parameter	Sacramento River	San Joaquin River	Delta
Toxaphene	Water: **0.73 µg/l** (1 hour average) [e] **0.0002 µg/l** (4 day average) [e] Tissue: [y] **0.1 µg/l** (whole fish, wet weight) (sum of 9 organochlorine insecticides)	Water: **0.73 µg/l** (1 hour average) [e] **0.0002 µg/l** (4 day average) [e] Tissue: [y] **0.1 µg/l** (whole fish, wet weight) (sum of 9 organochlorine insecticides)	Water: East of Antioch Bridge: **0.73 µg/l** (1 hour average) [e] **0.0002 µg/l** (4 day average) [e] West of Antioch Bridge: **0.0002 µg/l** (4 day average) [e] Tissue: [y] **0.1 µg/l** (whole fish, wet weight) (sum of 9 organochlorine insecticides)
pH	Water: **≥ 6.5 ≤ 8.5** [vv]	Water: **≥ 6.5 ≤ 8.5** [vv]	Water: **≥ 6.5 ≤ 8.5** [vv] Agricultural Intakes: [ww] **< 1.5 me/l**
Ammonia[1]	Water: **0.08 - 2.5 µg/l** (4 day average) [e,p] **0.58 - 35 µg/l** (1 hour average) [e,p]	Water: **0.08 - 2.5 µg/l** (4 day average) [e,p] **0.58 - 35 µg/l** (1 hour average) [e,p]	Water: East of Antioch Bridge: **0.08 - 2.5 µg/l** (4 day average) [e,p] **0.58 - 35 µg/l** (1 hour average) [e,p] West of Antioch Bridge: **0.025 µg/l** (annual median) **0.16 µg/l** (maximum)

[1] On January 28, 1998, the Parameter Assessment Team recommended that ammonia as a toxicant should be listed as "un-ionized ammonia" with associated targets of un-ionized ammonia. The Water Quality Technical Group approved the change to un-ionized ammonia but has not yet been presented the associated targets. After presentation and approval of the associated targets at the next Water Technical Group meeting, the appropriate changes will be reflected in this table.

Note: Water quality targets have no regulatory meaning within the context of CALFED.

CALFED Water Quality Targets for Parameters of Concern

Parameter	Sacramento River	San Joaquin River	Delta
Bromide*			Water: Drinking Water Intakes: **<50 µg/l** [gg, hh, ii] **; 50 - 150 µg/l** [uu]
TOC*			Water: Drinking Water Intakes: **<3 mg/l** [gg, pp]**; 2 - 4 mg/l** [tt]
Chloride			Water: Agricultural Intakes: For surface irrigation: [bb] **SAR: < 3** [cc] For sprinkle irrigation: [dd] **< 3 me/l** Drinking Water Intakes: **250 mg/l** [ll, rr]**; 150 mg/l** [ss]
Nutrients (total phosphorus, soluble reactive phosphorus, nitrate, nitrite, ammonia and organic nitrogen)	Water: Waters shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses. Waters shall not contain chemical constituents that adversely affect beneficial uses.[d]	Water: Waters shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses. Waters shall not contain chemical constituents that adversely affect beneficial uses.[d]	Water: Waters shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses. Waters shall not contain chemical constituents that adversely affect beneficial uses.[d] Agricultural Intakes: **< 5.0 mg/l** Drinking Water Intakes: no increase in nitrate levels[mm] **10 mg/l** [jj] (treated water)

* On December 3, 1997, a meeting between the drinking water industry, USEPA, and CALFED was held to identify source water quality targets for bromide and TOC. As a result of the discussion, urban water agencies are going to further analyze different levels of treatment for different levels of a constituent and report their findings to CALFED.

Note: Water quality targets have no regulatory meaning within the context of CALFED.

CALFED Water Quality Targets for Parameters of Concern

Parameter	Sacramento River	San Joaquin River	Delta
Salinity (EC_w)			Water: East of Antioch Bridge: West of Antioch Bridge: Agricultural Intakes: **< 0.7 dS/m or mmho/cm** [cc]
Salinity (EC)	Water: Knights Landing above Colusa Drain:[xx, yy] **≥ 230 mmho/cm** (50 percentile) or **≥235 mmho/cm** (90 percentile) I Street Bridge:[xx, yy] **≥240 mmho/cm** (50 percentile) or **≥340 mmho/cm** (90 percentile)	Water: Friant Dam to Gravelly Ford:[xx] **≥ 150 mmho/cm** (90 percentile)	
SAR:EC_w[ff] relationship			Water: Agricultural Intakes: SAR EC_w: **0 - 3 > 0.7** **3 - 6 > 1.2** **6 - 12 > 1.9** **12 - 20 > 2.9** **20 - 40 > 5.0**

Note: Water quality targets have no regulatory meaning within the context of CALFED.

CALFED Water Quality Targets for Parameters of Concern

Parameter	Sacramento River	San Joaquin River	Delta
Salinity (TDS)	Water:	Water:	Water: East of Antioch Bridge: West of Antioch Bridge: Agricultural Intakes: **< 450 mg/l** Drinking Water Intakes: <220mg/L (10-yr avg); <440mg/L (monthly avg)[oo]
Dissolved Oxygen	Water: Keswick Dam to Hamilton City, June 1 to August 31: **9.0 mg/l**[d,q] Below I Street Bridge: **7.0 mg/l**[d]	Water: Between Turner Cut and Stockton, September 1 through November 30: **6.0 mg/l** [d]	Water: [s] All Delta waters west of Antioch Bridge: **7000 µg/l** (minimum) [d,x] All Delta waters: **5.0 mg/l** [d,r]
Pathogens			Water: Drinking Water Intakes: **no MCL standard** [kk]; <1 oocyst/100L for *Giardia* and *Cryptosporidium*[nn]

Note: Water quality targets have no regulatory meaning within the context of CALFED.

D—035424

CALFED Water Quality Targets for Parameters of Concern

Parameter	Sacramento River	San Joaquin River	Delta
Temperature	Water: Keswick Dam to Hamilton City: **< 56° F** [d,u] Hamilton City to I Street Bridge: **< 68° F** [d,u] I Street Bridge to Freeport: **< 68°F** [d,v] I Street Bridge to Freeport, January 1 through March 31:**< 66°F** [d,w]	Water: At Vernalis: **< 68°F** [d,v]	Water: West of Antioch Bridge: **< 5°C** increase above for receiving water designated as cold or warm freshwater habitat. [x] Alteration of temperature shall not adversely affect beneficial uses. [x] Agricultural Intakes:
Turbidity			Water: West of Antioch Bridge: **No adverse effect or > 10 % change** Drinking Water Intakes: **0.5 or 1.0 NTU [jj]; 50 NTU[qq]** Agricultural Intakes:
Toxicity of Unknown Origin [t]			Water: West of Antioch Bridge: Acute- A median of not less than **90%** survival and a 90 percentile of not less than **70%** survival Chronic - **no chronic toxicity** in ambient waters

Note: Water quality targets have no regulatory meaning within the context of CALFED.

CALFED Water Quality Targets for Parameters of Concern

[a] dissolved form

[b] total recoverable form

[c] The effects of these concentrations were measured by exposing test organisms to dissolved aqueous solutions of 40 mg/l hardness that had been filtered through a 0.45 micron membrane filter. Where deviations from 40 mg/l of water hardness occur, the objectives, in mg/l shall be determined using the following formulas:

$Cu = e^{(0.905)(\ln \text{hardness})} - 1.612 \times 10^{-3}$

$Zn = e^{(0.830)(\ln \text{hardness})} - 0.289 \times 10^{-3}$

$Cd = e^{(1.160)(\ln \text{hardness})} - 5.777 \times 10^{-3}$

[d] Central Valley Regional Water Quality Control Plan

[e] General EPA 304(a) guideline

[f] Within the next year the State Water Resources Control Board or EPA will promulgate/adopt objectives which are hardness dependent. The adoption language is likely to contain a clause saying that the most stringent objective applies. Sometimes the 10 µg/l objective will be more stringent and at other times the new rule will be more stringent.

[g] Similar to the objectives for copper, we expect the State Water Resources Control Board or EPA to promulgate new objectives within the next year which will be more stringent than current objectives.

[h] The Central Valley Regional Water Quality Control Board expects to adopt an objective for carbofuran within the next year. The objective will probably be very similar to the performance goal.

[i] Water quality limited segments for mercury in fish tissue occur in the Sacramento River and Delta.

[j] Water quality limited segments for selenium in the water column from Salt Slough to Vernalis on the San Joaquin River.

[k] Lower Sacramento River is a water quality limited segment for carbofuran.

[l] California Department of Fish and Game acute (1 hour) and chronic (4 day) hazard assessment criteria.

[m] Sacramento River, San Joaquin River, and Delta water quality limited segments for chlorpyrifos.

[n] Sacramento River, San Joaquin River, and Delta water quality limited segments for diazinon.

[o] San Joaquin River water quality limited segment for DDT in tissue.

[p] Values are a function of pH, temperature, and designation of water body as cold or warm water fish beneficial use.

[q] When natural conditions lower dissolved oxygen below this level, the concentrations shall be maintained at or above 95% of saturation.

[r] Except those water bodies which are constructed for special purposes and from which fish have been excluded or where the fishery is not important and a beneficial use.

[s] Southern Delta around Stockton is a water quality limited segment for dissolved oxygen.

[t] Bioassay results or other special studies demonstrate toxicity. Sacramento River, San Joaquin River, and Delta are water quality limited segments for "toxicity of unknown origin."

[u] The temperature shall not be elevated above 56°F in the reach from Keswick Dam to Hamilton City nor above 68°F in the reach from Hamilton City to I Street Bridge during periods when temperature increases will be detrimental to the fishery.

[v] The daily average water temperature shall not be elevated by controllable factors above 68°F from the I Street Bridge to Freeport on the Sacramento River, and at Vernalis on the San Joaquin River between April 1 through June 30 and September 1 through November 30 in all water year types.

[w] The daily average water temperature shall not be elevated by controllable factors above 66°F from the I Street Bridge to Freeport on the Sacramento River

Note: Water quality targets have no regulatory meaning within the context of CALFED.

CALFED Water Quality Targets for Parameters of Concern

between January 1 through March 31.

[x] San Francisco Regional Water Quality Control Board objectives at 100 mg/l hardness. Formulas for calculating objectives for varying hardness levels are as follows:

$Cd = e^{(0.7852H - 3.490)}$ (4 day average)

$= e^{(1.128H - 3.828)}$ (1 hour average)

$Cu = e^{(0.8545H - 1.465)}$ (4 day average)

$e^{(0.9422H - 1.464)}$ (1 hour average)

$Zn = e^{(0.8473H + 0.7614)}$ (4 day average)

$= e^{(0.8473H + 0.8604)}$ (1 hour average)

[y] National Academy of Sciences (NAS)-National Academy of Engineering 1973

[z] Effect range-low (ERLs) concentrations

[aa] San Luis Drain Reuse, Technical Advisory Committee Selenium ecological risk guidelines

[bb] For surface irrigation, most tree crops and woody plants are sensitive to sodium and chloride, use the values shown. Most annual crops are not sensitive, use the salinity tolerance in Ayers and Westcot or equivalent.

[cc] SAR means sodium adsorption ratio. SAR is sometimes reported by the symbol RNa.

[dd] For overhead sprinkle irrigation, and low humidity (< 30%), sodium and chloride greater than 70 or 100 mg/l, respectively, have resulted in excessive leaf adsorption and crop damage to sensitive crops, see Ayers and Westcot.

[ee] EC_w means electrical conductivity of irrigation water, reported in mmho/cm or dS/m.

[ff] At a given SAR, the infiltration rate increases as salinity EC_w increases. To evaluate a potential permeability problem examine SAR and EC_w together.

[gg] Value arrived at in discussion with California Urban Water Agencies (CUWA), based on report prepared by nationall recognized water treatment experts.

[hh] Bromide value is predicated on the assumption that the MCL for bromate will be 5 µg/l in treated water.

[ii] U.S. EPA Secondary MCL for treated water. 1995.

[jj] U.S. EPA Current MCL for treated water. 1995.

[kk] U.S. EPA requires removal of 99.9 % of *Giardia* and 99.99% of viruses during water treatment. Higher levels of removal are required in poor water quality source waters.

[ll] Target level based on the CUWA Expert Panel Report recommendations (Bay-Delta Water Quality Criteria, December 1996). Expert panel assumed future drinking water regulatory scenario for disinfection by-product (DBP) control and inactivation of *Giardia* and *Cryptosporidium* based on the proposed Stage 2 D/DBP Rule and Proposed Enhanced Surface Water Treatment Rule (ESWTR).

The bromide target level is constrained by the formation of bromate when using ozone to inactivate *Cryptosporidium*.

[mm]Nutrients are a critical reservoir management issue. Nutrient levels are a determining factor governing the growth of taste- and odor-producing algae in water storage reservoirs. SWP supplies are nitrogen-limited; however, phosphorous is present in great excess. This is a problem with respect to the growth of blue-green algae, which can fix their own nitrogen. Water quality impacts of nutrients are driven by reservoir management issues as opposed to human health effects; as a result, use of the MCL for nitrate (as N) of 10 mg/L is not appropriate.

[nn] Desirable target levels are based on likely future regulatory scenarios under the ESWTR that will base required levels of pathogen removal/inactivation treatment on pathogen density in source water. Future regulations may require removal requirements for *Cryptosporidium*. Increasing treatment for removal of

Note: Water quality targets have no regulatory meaning within the context of CALFED.

CALFED Water Quality Targets for Parameters of Concern

pathogens makes it more difficult to control the formation of DBPs. To balance disinfection requirements for controlling pathogens with the production of DBPs selection of a Bay-Delta alternative should not result in degraded water quality necessitating increased removal requirements for pathogens.

[oo] Target levels for TDS would allow compliance with the TDS objectives contained in Article 19 of the SWP Water Service Contract. The average TDS levels in SWP supplies over the last ten years have consistently exceeded the 220 mg/L (10-year average) SWP objective. The 10-year averaging period for the 220mg/L objective is too long to be sufficiently protective of source water quality. MWD staff are currently exploring the development of appropriate alternative TDS objectives for shorter time frames (i.e., 1 year and 6 month averages) and will forward that information to CALFED when available. The SWP TDS objective of 440 mg/L (monthly average) is a problem for water resource management programs, especially in the months of April and September, and there is a real need to reduce peaks in TDS in SWP supplies. Consistently low TDS levels are needed to minimize the following salinity-related impacts: Increased demand for Delta water supplies when such water is used to blend with other higher salinity water sources; adverse impacts on water recycling and groundwater replenishment programs, which depend on Delta water supplies to meet local resource program salinity objectives. Failure to develop local resource programs may result in increased demand on Delta exports; economic impacts on industrial, residential, and agricultural water users.

[pp] Target level based on the CUWA Expert Panel report recommendations (Bay-Delta Drinking Water Quality Criteria, December 1996). Expert panel assumed future drinking water regulatory scenario for DBP control and inactivation of *Giardia* and *Cryptosporidium* based on the proposed Stage 2 D/DBP Rule and proposed ESWTR. The proposed D/DBP Rule requires increased levels of TOC removal as TOC concentrations in source waters increase. The recommended TOC target level is constrained by the formation of total trihalomethanes when using enhanced coagulation for TOC removal and free chlorine to inactivate *Giardia*.

[qq] Reduced variability in turbidity is needed to improve treatment plant performance. When source water turbidity increases, water is more difficult and costly to treat. Also, increased turbidity reduces protection from pathogens because turbidity interferes with disinfection.

[rr] Water Quality Control Plan for the San Francisco Bay/Sacramento - San Joaquin Delta Estuary. May 1995. 95-IWR. SWRCB and Cal-EPA. According to the Water Quality Control Plan, this value applies from October - September during all water year types for Contra Costa Canal at Pumping Plant No. 1, West Canal at Mouth of Clifton Court Forebay, Delta-Mendota Canal at Tracy Pumping Plant, Barker Slough at North Bay Aqueduct Intake and Cache Slough at City of Vallejo Intake.

[ss] Water Quality Control Plan for the San Francisco Bay/Sacramento - San Joaquin Delta Estuary, May 1995. 95-IWR. According to the Water Quality Control Plan, this value applies to a certain number of days per year, depending on water year type, to the Contra Costa Canal at Pumping Plant No. 1 and the San Joaquin River at Antioch Water Works Intake.

[tt] Recommendation of September 30, 1997, from Karen Schwinn, Water Division, USEPA.

[uu] Recommendation of July 24, 1997, from Bruce Macler, Water Division, USEPA.

[vv] Changes in normal ambient pH levels shall not exceed 0.5 in fresh water with designated COLD or WARM beneficial uses.

[ww] Alkalinity as $CaCO_3$.

[xx] At 25° C. Central Valley Regional Water Quality Control Plan.

[yy] Based upon previous 10 years of record. Central Valley Regional Water Quality Control Plan.

Note: Water quality targets have no regulatory meaning within the context of CALFED.

D-035428